

THE RESPIRATORY PROTECTION PROGRAM: *EMPLOYEE TRAINING*

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

INTRODUCTION

Exposure to hazardous chemicals in the form of dusts, fumes, mists and gases may cause lung damage, cancer and other serious ailments to vital organs and the central nervous system. To protect you from these adverse health effects, your company has established a written respiratory protection program in accordance with OSHA's Respiratory Protection Standard. This program, which is available for employee review, outlines the measures taken by your employer to ensure the health and safety of your respiratory system. This video shows employees how this plan works to protect them from respiratory hazards.

Topics include employee medical evaluation, respirator selection and assignment protection factors, various types of respirators, hazards of IDLH atmospheres, qualitative and quantitative fit tests, user seal checks and cleaning and storage of respirators.

PROGRAM OUTLINE

BACKGROUND

- A large part of the respiratory protection program involves employee training. Important aspects of this training include understanding the respiratory hazards in your work environment, and learning how to protect yourself from respiratory hazards through the proper selection and use of a respirator.
- Prior to employees being required to use a respirator, the company has attempted to reduce respiratory hazards through engineering and work practice controls.
- Some examples include ventilation and exhaust hoods or barriers to prevent exposure. Only when these practices fail to sufficiently reduce the hazards will employees be required to use a respirator to further reduce exposure.

MEDICAL EVALUATION

- Before being allowed to use a respirator, the company will arrange for you to have a medical evaluation. A licensed medical professional will conduct this evaluation and determine whether you can safely wear a respirator while working.
- During the evaluation you will be asked to provide a medical history, such as exposure to past occupational hazards, and any current conditions, such as asthma.
- Appendix C of the OSHA standard 29 CFR 1910.134 contains a medical questionnaire. It is mandatory that you either fill out this questionnaire or undergo an initial medical exam that obtains the same information as the questionnaire.

- In addition, various tests may be performed such as a pulmonary function test or X-rays may be taken to establish the condition of the heart and lungs.
- It's important to remember that the medical evaluation is being performed to determine if you can safely wear a respirator, and your cooperation is required.

RESPIRATOR SELECTION & ASSIGNED PROTECTION FACTORS

- In most situations, your employer will determine which type of respirator is required for a particular work environment. The types of respiratory hazards and levels of airborne contaminants may vary throughout the workplace.
- As part of the written respiratory protection program, your employer has evaluated each of these areas and selected a respirator that will reduce your exposure to a safe level
- A survey of workplace respiratory hazards has been performed and air sampling has been used to identify contaminants in the air and their concentration.
- OSHA has established permissible exposure limits (or PEL's) for various contaminants. The amount, by which the concentration of an airborne contaminant exceeds the permissible exposure limit, is referred to as the hazard ratio.
- OSHA's Respiratory Protection Standard and many manufacturers have assigned a "protection factor" to common respirator classes and styles. This assigned protection factor, commonly called an APF, gives an indication of how much the respirator will reduce the user's level of exposure compared to the level of contaminant in the ambient air. This number is necessary for determining the proper respirator for the job.
- APF numbers for types of respirators range from 10 to 10,000 and have been determined through much research and testing. For example, a half mask air-purifying respirator has an APF of 10, while a full face-piece respirator has an APF of 50.
- This is why it is so important to wear the proper respirator for the job. Changing into a respirator with a lower APF than the one assigned to you may not provide adequate protection from the hazards.
- If you have any questions concerning the respirator you have been assigned or why it was selected, ask your supervisor.

DUST MASKS

- Disposable dust masks are sufficient for areas where low levels of dusts are airborne. Dust masks are not to be worn while spray painting because they cannot protect against harmful vapors.
- When the mask becomes clogged with dust, dispose of it and get another one.

FILTER RESPIRATORS

- When you need more protection than that offered by dust masks, filter respirators are usually an appropriate option. They filter the air you breathe.
- Filters are assigned a rating by the National Institute of Occupational Safety and Health (NIOSH) according to the percentage of efficiency a filter has at capturing airborne particles. This rating is either 95 percent, 99 percent or 100 percent; the higher the number, the greater protection the filter provides.
- Breathing is also more difficult with the higher rated filters, so make sure you have a filter that is appropriate for your job task. Selecting a higher efficiency than necessary places unnecessary strain on the user, while selecting too low an efficiency may not provide enough protection.

CLASSES OF FILTER RESPIRATORS

- Filter respirators are divided into three classes or series based on the particles they are designed to remove.
- N-series filters are used for non-oil contaminants, such as solid and water-based particulates. N stands for not resistant to oil.
- R-series filters are resistant to oil; they can be used for work areas that contain oil-mist. R-series are only designed for use during one shift and must then be discarded.
- P-series filters are considered oil proof. They can be used for work areas that contain oil-mist and are designed to be re-used rather than disposable.
- These types of filters, sometimes called mechanical filters should be replaced whenever noticeable changes in breathing resistance occur.

CHEMICAL CARTRIDGE RESPIRATORS

- Filter respirators that protect against hazardous chemicals are known as chemical cartridge respirators. The cartridges capture gases and vapors given off by chemicals.
- Each cartridge has a specific purpose and some protect against only one chemical while others protect against several types of chemicals.
- Your employer will establish a change out schedule for chemical cartridges to ensure they are changed before the end of their service life and before “break through” occurs. Break through is when an employee detects vapor or gas in their respirator.
- Make sure you understand your organization’s change out schedule and always change chemical cartridges as required.

IDLH ATMOSPHERES

- While filter type respirators are effective in many environments, they can turn deadly when used in the wrong environment.
- Some atmospheres, such as those that are oxygen deficient or have very high chemical concentrations are so hazardous they are Immediately Dangerous to Life and Health. These are commonly referred to as IDLH atmospheres.
- Filter type respirators are not effective in this type of atmosphere because they only filter the air and have no ability to add oxygen to the air. Each year, workers are killed by mistakenly wearing filter type respirators into IDLH atmospheres.
- IDLH atmospheres require a self-contained breathing apparatus (SCBA) or a supplied-air respirator (SAR) with an auxiliary self-contained air supply to be used.

SAR’S & SCBA’S

- Supplied-air respirators provide air through a hose that is attached to a compressor. The compressor supplies purified air that has had all contaminants removed.
- The self-contained breathing apparatus, commonly known as an SCBA, has a container of air that is carried on your back.
- Most SCBA’s supply air for 30 to 60 minutes. Your weight and the physical stress of the task are factors in the duration of the air supply.

QUALITATIVE & QUANTITATIVE FIT TESTS

- Before being allowed to wear a respirator, employees will undergo a formal fit testing procedure to ensure a proper fit. You will undergo a fit test at least once a year while you are in the respiratory program.
- One type of test is a qualitative fit test. A qualitative test uses scented chemicals, smoke or other irritant to determine if you can smell or taste it through your respirator.
- If you can smell or taste the irritant, then you don't have a good fit and must be re-fitted.
- Another type of test is a quantitative test. A quantitative test uses an instrument to numerically measure the leakage of a substance into the respirator.
- While undergoing fit testing, the subject will be asked to perform several exercises to simulate the movements that occur during respirator use such as deep breathing, turning the head from side to side, talking to the training or reading out loud, grimacing and bending at the waist.
- Fit testing will be done on the type, style and size respirator you will be wearing while performing your job. A properly fitting respirator is essential to providing protection from respiratory hazards.
- Keep in mind that facial hair often interferes with a person's ability to wear a respirator safely. This is why your organization may have a restrictive policy concerning facial hair.

USER SEAL CHECKS

- Fit testing should not be confused with user seal checks. A user seal check must be conducted every time you put on a respirator.
- The purpose of the user seal check is to confirm that the respirator has been put on the face properly and an appropriate seal has been established. A seal check can be either a positive pressure test or a negative pressure test.
- The positive pressure test involves putting the palm of your hand over the exhalation valve of the respirator and gently breathing out into the mask. If you feel a build up of pressure beneath the mask and see the side of the face piece bulge out slightly, you have a good fit.
- A negative pressure test is performed by placing both hands over the inhalation valves and breathing in gently. The face piece should collapse slightly against your nose. Hold your breath for 10 seconds; if the mask stays collapsed, you have a good fit.
- If you have any problems getting a proper seal, notify your supervisor.

PROPER USE OF RESPIRATORS

- Respirators are a valuable and important piece of safety equipment, but understand that they will only provide protection when used properly. Always follow your company's policies for respirator use.
- If you have any difficulty breathing or can taste or smell a hazardous substance while wearing a filter respirator, change the cartridges immediately while in a safe area and perform a seal check.
- Never assume that one type of cartridge will protect you from all respiratory hazards. When you move from one hazardous area to another, make sure you know which hazards are present in the new area and that you have the appropriate cartridges. Ask your supervisor if you are unsure.
- Never take off your respirator in a hazardous area for any reason. It only takes a few seconds to be overcome by certain gases and vapors. Exit the hazardous area before removing your equipment.

CLEANING & STORAGE OF RESPIRATORS

- To keep your respirator sanitary and in good working order it must be properly cleaned, disinfected and stored when not in use.
- Respirators worn by a single person need to be cleaned and disinfected once a day or as often as needed to keep it sanitary, while respirators shared among employees must be cleaned and disinfected after each individual's use.
- First remove any filters, cartridges or canisters. Disassemble the face piece and remove the straps.
- Inspect the tightness of all connections and the condition of the various pieces such as straps, tubes, diaphragms and cartridges. Any defective parts should be repaired or replaced by a qualified person.
- Wash all parts of the respirator with a detergent recommended by the manufacturer and warm water. A bristle brush will remove excess dirt.
- Use warm water to rinse all of the parts. Be sure to rinse off all of the detergent because the residue can dry on the rubber and crack it or corrode metal.
- After thoroughly rinsing and draining, the parts should be immersed in a disinfectant of bleach, iodine or cleanser approved by the respirator manufacturer for two minutes. Once removed, the pieces should be completely rinsed, drained and then dried, either with a lint-free cloth or air-dried.
- When the respirator is reassembled and ready to store, put it in its case or a plastic bag. Store it in a clean, dry place approved by your company.

PREPARE FOR THE SAFETY MEETING

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your Videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to show viewers how the company's respiratory protection program works to protect them against respiratory hazards, including the selection, use and care of various types of respirators.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Lead discussions about job tasks and environments at your facility that require the use of respiratory protection and the appropriate devices for those situations. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewer will be able to identify the following:

- How assigned protection factors (APF's) are used to determine the appropriate respirator;
- What protection is afforded by the various types and classes of respirators;
- How qualitative and quantitative fit tests are performed;
- How to perform positive and negative pressure seal checks;
- How to properly clean and store a respirator.

**THE RESPIRATORY PROTECTION PROGRAM:
EMPLOYEE TRAINING
REVIEW QUIZ**

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. You must undergo a medical evaluation before being allowed to use a respirator at work.
 - a. true
 - b. false

2. A half face-piece air-purifying respirator has an assigned protection factor (APF) of _____.
 - a. 10
 - b. 50
 - c. 100

3. Which filter respirator is resistant to oil but must be discarded after use on a single work shift?
 - a. N-Series
 - b. R-Series
 - c. P-Series

4. All cartridges for chemical cartridge respirators are designed to provide protection for one chemical only.
 - a. true
 - b. false

5. Which type of fit test uses an instrument to numerically measure the leakage of a substance into a respirator?
 - a. quintessential
 - b. qualitative
 - c. quantitative

6. A user seal test must be conducted every time you put on a respirator.
 - a. true
 - b. false

7. Which user seal test consists of placing both hands over the respirator's inhalation valves and breathing in gently?
 - a. positive
 - b. negative
 - c. neutral

8. What should you do if you have difficulty breathing or can taste or smell a hazardous substance while wearing a filter respirator?
 - a. change the cartridges at the end of your shift
 - b. ask your supervisor if your cartridges need to be changed
 - c. go to a safe area and change the cartridges immediately

ANSWERS TO THE REVIEW QUESTIONS

1. a

2. a

3. b

4. b

5. c

6. a

7. b

8. c